

Medical Education in Utah

MAXWELL M. WINTROBE, MD, PhD, *Salt Lake City*

MEDICAL EDUCATION in the United States and Canada in the 17th and 18th centuries was based on an apprenticeship system. In due course this took the form of "walking the wards" in hospitals, some of which boasted teachers who had crossed the Atlantic and had followed the footsteps of the master physicians of Europe. Then, as early as 1750, as a supplement to apprenticeship, informal classes and demonstrations were offered in Philadelphia. Soon afterwards a medical school was established there as an organic part of an institution of learning, the College of Philadelphia, and in intimate relationship with the Pennsylvania Hospital, a large public institution. In New York and Boston, and in association with colleges at Yale, Dartmouth and elsewhere, similar schools were organized.

Early in the 19th century a proprietary medical school was established in Baltimore. With this development, proprietary medical schools multiplied in the United States without restraint, for they were not limited by the number of educational institutions with which they might be affiliated. Their establishment represented a harmful precedent because, unlike such schools in London, they conferred degrees and gave the right to practice. Flexner, in his classic study,¹ reported that the United States and Canada in a little more than a century produced 457 medical schools—many, fortunately, short-lived. These schools were a financial boon to their proprietors and a scourge to the public because the doctors they turned out were mostly ignorant and incompetent.

In Utah one brief attempt to found a proprietary

medical college was made in 1880 by a Dr. Frederick S. Kohler in a small farming village, Morgan City, some 40 miles northeast of Salt Lake City.² Four students graduated in 1882, but the college soon succumbed to the accusation that it was a "diploma mill." This left the way clear for the establishment of a medical school by the University of Utah shortly after the turn of the century.

The formation of a medical school at the University of Utah was a natural development in an institution tied closely to a church that traditionally fostered education. There had been a growing interest in the natural sciences and, on the part of some citizens, an increasing perception that more needed to be done to improve health care. There was also no doubt a desire on the part of prospective students and their parents to obtain medical education nearer to home and thus to avoid the expense of traveling East.

Early Attitudes and Obstacles

Medicine, however, was not wholeheartedly accepted by all adherents of the church. For example, Brigham Young is quoted as saying, "When I lay hands on the sick, I expect the healing power and influence of God to pass through me to the patient, and the disease to give way. I do not say I heal everybody I lay hands on, but many have been healed under my administration."³ This, one must say, at least did no harm and had the merit of avoiding some of the harmful practices and medications that were then being promoted. Furthermore, it did not inhibit people from trying to help themselves.

The suspicion with which medicine was regarded by many was greatly influenced by the experience of the residents of Utah, Mormon and Gentile, with the practitioners of medicine who had ventured, for one reason or another, to this remote

¹ Presented as part of a symposium on History of Medicine in Utah, University of Utah, October 24, 1981.

² Dr. Wintrobe is Distinguished Professor of Internal Medicine, Department of Internal Medicine, University of Utah College of Medicine, Salt Lake City.

³ Reprint requests to: Maxwell M. Wintrobe, MD, PhD, Department of Internal Medicine, University of Utah College of Medicine, 50 North Medical Drive, Salt Lake City, UT 84132.

ABBREVIATIONS USED IN TEXT

AAMC= Association of American Medical Colleges
 OSRD= Office of Scientific Research and Development
 USPHS= US Public Health Service
 VA= Veterans Administration

area of the country. These experiences had often been unhappy ones. In many parts of the United States, medicine at the turn of the century was primitive in many respects, and medical education was likewise very imperfect. That even graduates of authentic medical schools were at times referred to as "poison doctors" is understandable. We know that the practices of purging and venesection were responsible for many deaths; moreover, some of the drugs employed—for example, arsenic—were poisonous and physicians frequently carried infection from one patient to another. All in all, there was a basis for the distrust in which doctors were held. Despite the doubts, a number of Mormons went East to train at established medical schools and returned home to practice medicine and surgery.

In addition to these considerations, there was the problem of cost of establishing and maintaining a medical school and the fact that there were many demands on the limited resources of the community. What might be considered as a beginning was made by Dr. John Rockey Park, the first president ("principal") of the University of Utah, who set up classes for the teaching of biologic subjects in 1869.⁴ Dr. Park was himself a doctor of medicine but abandoned his profession after three years of practice in Ohio when he decided to go West. He was a Gentile and a teacher at heart but not much progress was made until President Talmage took office in 1894. Talmage had a background in biology and biology expanded appropriately. With the arrival in 1904 of Ralph V. Chamberlin, PhD, from Cornell as assistant professor of natural history, education in biologic sciences was greatly stimulated. Over the next two years, Dr. Chamberlin organized and expanded the Department of Biology, establishing courses in vertebrate histology and embryology and, ultimately, in physiology and bacteriology. Soon a separate Department of Anatomy and Pathology was formed under Dr. Ephraim Gowans, who was shortly succeeded by Dr. John Sundwall.

A Two-Year Medical School

It is to Professor Chamberlin that credit should be given for starting medical training in the University of Utah. He was acquainted with the two-year medical course offered at Cornell and thought that a similar school could be set up in Utah, arguing that there was a need for better-trained physicians who could displace the existing quackery. He also recognized the need for the teaching of basic sciences by persons trained in these fields rather than by practitioners for whom such teaching was a side issue. He also emphasized that "high-grade teaching in the sciences and research work are inseparable."⁵(p193) Dr. Chamberlin also stressed the value of high standards, both for the state and for the profession, and felt that these could be best attained when the commonwealth supported such training, rather than leaving it to proprietary medical schools.

As a consequence of his efforts, a two-year medical school was officially established by the university administration in August 1905. And, to comply with state laws regarding accreditation, medicine was separated from biology. However, the medical school was officially made a department rather than a school, primarily as a concession to Dr. C. G. Plummer, a member of the university's Board of Regents, who felt that a medical school would be "too expensive," a refrain, incidentally, that one heard in 1943 and continued to hear for a number of years thereafter. It was not easy to convince people that Utah could not afford to continue to suffer from mediocre medical care, which was in the end more costly than first-rate medical education and health care.

Dr. Chamberlin was made dean of the school in April 1906, as well as professor of histology and embryology. Additional space was acquired, courses were added and 47 students were enrolled. The University of Utah's medical school thus joined eight other schools in the United States that offered a two-year course. As the result of an official inspection in the spring of 1906, the school was given an A rating by the Association of American Medical Colleges (AAMC),⁴(p260),⁵(p193) which made it possible for students to transfer with full credit to four-year schools.

Dean Chamberlin went on to plan the addition of the third year of a four-year course. The acquisition of the Judge Memorial Building near the university campus, which had been modified to

serve as a miners' hospital and home, would have provided an opportunity for some of the clinical training he envisioned. This idea was said to have the support of the "downtown" physicians, but at the university all was not smooth sailing. Pettiness and jealousy were strong forces. The potential growth of the medical school aroused the concern of the School of Arts and Sciences, especially of its dean, Byron Cummings. His strong opposition culminated in the shelving of the plan, the resignation in 1907 of Dean Chamberlin and the incorporation of the Department of Medicine in the School of Arts and Sciences. The university catalogue for 1907-1908 lists Byron Cummings, AM, as Dean of the Department of Medicine, a position he held until 1912-1913, when the arrangement was quietly abandoned as the result of repeated objections of visiting committees of inspection and accreditation.

Dr. Chamberlin, however, had laid a good foundation. For example, guided by the laws of other states, he presented to the Utah state legislature a bill providing cadavers for the school, which was approved in 1907^(p203) and has operated unchanged since that time. In the Flexner report on *Medical Education in the United States and Canada*¹ published in 1910, the Utah "half-school," as it was called, was described as having an attendance of 18, a teaching staff of six professors and ten of other grade, a budget of \$10,000 and laboratories "adequately equipped for the routine instruction of small classes" in the traditional basic sciences of medicine.^{1(p313)} The spirit was described as excellent. More liberal support was recommended, however, if the department was to justify its high entrance standards. It should be noted that Utah at that time had a population of 336,112, of which Salt Lake City accounted for 65,464.

At first the entrance requirement to the "Department of Medicine" was only a high-school course, but in 1909 a year of college work was added and, beginning in 1910-1911, two years of premedical work were required. Because of this, in 1910 Utah was again rated A by the AAMC and was listed among the top group of the 155 medical schools in the United States and Canada, becoming one of 16 schools in that category.

This happy situation was destined not to last. Dissension at the University regarding matters of salary and of personalities and other controversies led to resignations and recriminations, even demands for the removal of the president. As a

result, the spirit of the medical school dropped to an all-time low that was to last seven or eight years. In the spring of 1916 the Board of Regents accepted President John A. Widtsoe's recommendation that the medical school be continued, providing the cost of its maintenance in the class A category did not exceed the then cost of its existence by \$2,500 (Minutes of the Board of Regents, University of Utah, June 1, 1916 [unpublished]). This nominal (and reluctant?) show of support had little effect, however, because of the beginning of World War I. Ultimately, the ever-threatening possibility of a drop in rating to B (the category of the lower 37 of the 104 medical schools recognized at that time), the end of World War I and the appointment of George Thomas as president of the university in 1922 culminated in a slow uphill climb in educational standards and improvement in faculty and in curriculum. By 1922 Utah students were at least having less difficulty than before in transferring for their final two years to schools of high quality.

The Four-Year School

As time went on Utah students again found it difficult to transfer to four-year schools, this time mainly because the latter had to accommodate their own students. The AAMC urged that Utah become a four-year school, as did Ralph O. Porter, professor of pharmacology, who was appointed dean in 1923. Dean Porter began to raise standards and improve the faculty, something he accomplished only by producing some hard feelings.³ The premedical requirement was raised to three years. In the end President Thomas, caught in the squeeze of the Great Depression, took a position opposed to the idea of a four-year school, an attitude heartily supported by the deans of other schools on the campus. From their viewpoint, the medical school was a threat to their budgets. The prospect of a minimum cost of \$135,000 a year to operate a four-year school was too great a stumbling block. Furthermore, they strongly objected to the notion of salaries for professors in the medical school that would exceed their own.

Yet, pressure for a four-year school persisted. To improve the quality of teaching in the first two years, clinical experience was needed. Also, there was a genuine growing need for physicians. The Medical School Alumni Association, formed in 1935 and comprised of graduates of the two-year school, favored the formation of a four-year

MEDICAL SCHOOLS OF THE WEST

school, as did the then dean, Lyman L. Daines, and the Utah State Medical Association. But the Board of Regents and the general public continued to demur.

Not until the retirement of President Thomas in November 1941 and the appointment of President Leroy E. Cowles did the atmosphere change. A committee of the Board of Regents (consisting of L. E. Viko, A. H. Reiser, W. H. Leigh and E. J. Glade) was formed and, with their recommendation and that of Dr. H. G. Weiskotten of the American Medical Association, plans were drawn up for the formation of a four-year medical school. Approval was given by the Board of Regents on May 18, 1942. Dr. A. Cyril Callister, a practicing surgeon, was appointed dean, half-time, with Professor Clay Freudenberger, acting dean following the death of Dr. Daines, as associate dean.

Although he was ultimately the subject of much criticism, the appointment of Dr. Callister as dean was fortunate. Much needed to be accomplished

and Dr. Callister had the requisite firm and determined hand. Moreover, he was a graduate of Harvard, as well as an excellent salesman. One of his former classmates at Harvard was Dr. Alan Gregg, who by this time was Director of the Rockefeller Foundation for Medical Education and the person best informed about potential staff and overall approaches and objectives. Another important friend was Dr. Irving McQuarrie, head of pediatrics at the University of Minnesota. With their advice and help, by September 1943 the heads of the Departments of Surgery (Phillip B. Price), Obstetrics and Gynecology (A. Louis Dipple), Pediatrics (John Anderson) and Medicine (Maxwell M. Wintrobe) were on hand, recruited from Johns Hopkins Medical School and the University of Minnesota. Their offices and laboratories were established at the Salt Lake County General Hospital (see Figure 1), some four or five miles from the medical school building (Figure 2) on the University of Utah campus. Dr. H. L. Marshall, long associated with the



Figure 1.—The Salt Lake County General Hospital. The building shown housed mainly the surgical wards and offices, as well as the operating rooms and laboratories. In 1943, only three floors existed. The structure on the fourth floor and the extension to the right were added later. A former infirmary building (not shown) was used, in part, for medicine and pediatrics, as well as the heart station and some research laboratories. Obstetrics was in another one-story wooden "temporary" structure.

university in the Department of Physical Education, became Professor of Public Health and Preventive Medicine.

Overcoming Opposition

The situation these men encountered was not a rosy one. The university had reached an agreement with the Salt Lake County commissioners to turn over the clinical operation of the county hospital to the teaching staff so that it could be used as the teaching hospital. For its part, the medical school would give complete care to patients without cost to the county. This facility, however, was a striking contrast to the institutions from which they had come, and turned out to be much worse than any of them had expected. The hospital was dirty and poorly staffed, and it soon became apparent that its condition could not be readily improved. The hospital was a political plum and the county commissioner, who was in charge of "charities," staffed it with his henchmen and hangers-on. The superintendent, the management personnel, the kitchen staff, the dishwashers, the cleaning staff, the laundry staff, everyone was beholden to the commissioner and very few, if any, were interested in doing their job well. A drunken orderly might be discharged one day, only to return the next on the order of the commissioner. Everyone, even the nurses, was forced

to contribute to the political fund. Only with great difficulty were the new clinical heads of the hospital ultimately able to exempt the nurses from this requirement. Almost comically (were it not so sad for the patients), when an election resulted in a change from one political party to another, the entire staff would be changed and the result would be total chaos.

The county hospital and its operation presented a continuing problem, one that was not improved to any important degree until after an accreditation crisis in 1954. This, as will be mentioned later, caused the county commissioners to agree to the appointment of a citizens' advisory board, made up of some of the business leaders in the community. These men could appreciate the problems of the hospital when they were explained by the clinical department heads. The county commissioners, though unimpressed by the hospital's department heads, recognized that their political careers could be seriously influenced by the opinions of the business leaders. From the time of the appointment of this board, the situation became more tolerable.

When the newly established four-year school was inspected with a view to accreditation in February 1944 by Dr. Fred C. Zappfe of the Association of American Medical Colleges and Dr. Victor Johnson representing the Council on Medi-

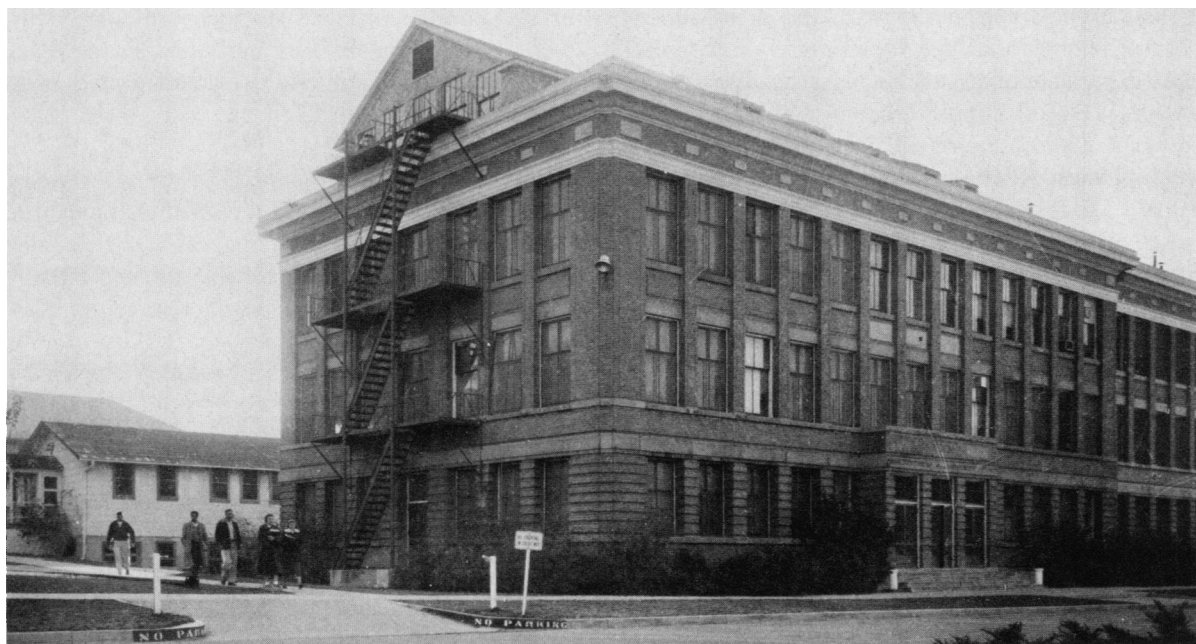


Figure 2.—The University of Utah Medical School building in the early days of the four-year school. Behind it is one of the temporary wood structures which were made available as more space was needed. These remained "temporary" until 1965.

cal Education of the American Medical Association, the need for changes and improvements in the basic science departments was evident. The content and the quality of the teaching had fallen far behind that of the better institutions in the United States. The immediate removal or demotion of several professors, some of long standing, was recommended. When this was attempted, however, charges of personal prejudice, authoritarianism and lack of appreciation of loyal service were made and there was much hard feeling. The administrative council of the university, on which sat some friends of those who had been criticized in the Zappfe-Johnson report, took their part. The council was concerned, moreover, that tenure was in jeopardy. Some members of the council were unwilling to admit that they were not qualified to judge the competence of those criticized, the needs of the curriculum or the qualifications of those newly recruited. They were upset, moreover, that the new department heads were to be paid \$8,000 a year, in contrast to the \$4,500 that was the top salary at the university. They could not be convinced that ultimately this would raise salaries in general at the university, as it later did.

There also was fear on the part of some of the "downtown physicians" that the medical school would flood the state with doctors and that the medical faculty would compete with them. Leaks of the Zappfe-Johnson report to the press added fuel to the crisis that developed and were supplemented by statements to the press by disgruntled persons. The full Zappfe-Johnson report had been withheld in the hope of shielding those who had been criticized. Eventually the whole report was exposed despite the unflattering comments it contained. Even the Association of University Professors was brought into the foray. The year 1944 was, indeed, exciting. Dean Callister was one of those severely criticized. Fortunately he stood his ground and continued to receive the loyal support of Dr. Louis E. Viko, a member of the Board of Regents and an outstanding and highly respected physician, and of Dr. Leo Marshall. In the view of the new faculty these were the "three horsemen."

Although beleaguered on all sides the Board of Regents continued to support the dean and the recommendations of the inspecting committee. Resignations followed and plans were made to revitalize and modernize the outdated and inadequate preclinical departments by securing out-

standing persons to head them. As a result, conditional approval of the school was given at a second inspection in May 1944.

It soon became evident that one of the tasks of the new clinical department heads, in association with the dean, was the development of a medical school of which everyone, the university and the community alike, could be proud. Dean Callister was a headstrong person and preferred to rule with an iron hand. However, the new faculty were more experienced in the task at hand, having served in full-time teaching and research positions in some of the best schools in the country. There were clashes but decisions were eventually reached that all knew were in the best interests of the school. Drawing on their acquaintance with medical scientists throughout the country and with the advice of such men as Alan Gregg, the dean and the four new clinical heads recruited new department heads from the country's outstanding institutions for pharmacology, biochemistry, physiology and pathology.

With the resignation of Dr. Callister in January 1945 and the appointment initially of an interim dean's committee and in September 1945 of Dr. Leo Marshall as acting dean, the executive committee of the College of Medicine, made up of the heads of all the departments, became all-powerful, with the dean acting as its executive officer. This method of operation, incidentally, was continued for at least 20 years, and gave way only gradually to the assumption of more authority by the dean as the executive committee expanded and consequently became unwieldy.

What Utah Had to Offer

An important characteristic of the faculty of the new school was their willingness to try to build something worthwhile despite the absence of substantial resources. They realized that what Utah was offering was an *opportunity*, nothing more. Salt Lake City was the logical location for a new medical school. There was no school between the Canadian and Mexican borders on the north and south, or between Denver and the Pacific coast, where Portland had one medical school, Los Angeles two and San Francisco two. The budget available to recruit faculty was very small but Utah's tax base, with a population of about 600,000, was likewise small. The physical facilities were limited but the country was now in the throes of World War II. Like the pioneers who had preceded them in other ventures in the West, they

resolved to do their utmost with the resources that were available.

The members of the new staff were all relatively young. Their careers lay in the future, not behind them. Energy and drive were in abundance and the challenge was appealing. So also was the geographic location of Salt Lake City, with its magnificent outdoor attractions available summer and winter. Nowhere in the world is excellent skiing as easily accessible as in Salt Lake City and this fact alone contributed in no small part to recruitment and the esprit de corps that developed. It made up to some extent for the lack of cultural facilities. Of those who came in the first contingent, only one, the head of the Department of Obstetrics and Gynecology, soon left but he was promptly replaced by another excellent man, Dr. Charles McLennan.

Challenges and problems were in abundant supply. Despite the contention of many of the citizens of Utah, standards of education in the high schools and even at the university compared unfavorably with those the new faculty had noted elsewhere. Medical students had to be convinced that excellence was the goal and that they had to extend themselves to the utmost of their abilities. Demands were made on them to which they had not been accustomed, causing a few to succumb under such pressure. There was a complaint that the failure rate at Utah was as high as 10 percent, as compared with only 2 percent or 3 percent elsewhere. Nevertheless, though some students and perhaps some parents grumbled, most appreciated the efforts of the faculty and gave their best.

Antagonism on the part of some of the medical profession was fomented by those who had envisioned themselves as department heads or, at least, as professors, notwithstanding their lack of qualifications for such positions. Others perhaps feared competition by the new faculty, as already mentioned, and still others may have been discomfited by the gradual rise in the expectations of the public regarding the quality of health care. However, most physicians and surgeons of the community backed the school and the efforts of the faculty and were not worried by these changes.

The faculty was full time. They had not come to earn a fortune and the clinical staff readily agreed to see patients only on referral by other physicians and to limit their clinical work to the county hospital, with neither offices nor hospital staff appointments elsewhere. This practice limited

the number of patients they could see and avoided competition with physicians in private practice. Furthermore, it left more time for teaching and research.

Support for Research

The faculty realized that one of the functions of a university, of which they felt the medical school to be an integral part, is to contribute to knowledge. Everyone expected to do research. Most of the new faculty had already pursued this objective and were dedicated to continue. A limiting factor, however, was the need for funds to develop laboratories and to hire technical personnel. This presented a very real difficulty because the state legislature and the university, with their lingering doubt that Utah could "afford" a four-year medical school, were unlikely sources for such help. Here private gifts, though relatively small in terms of the 1980's, played an exceedingly important role. Dr. Wintrobe, who had been conducting experiments at Johns Hopkins in which pigs were used, would not come to Utah unless facilities could be provided to continue these studies. To accommodate his needs, the very persuasive Dean Callister secured over \$30,000 from Morris and Joseph Rosenblatt of the EIMCO Corporation. Morning Milk Company gave \$10,000 for the pediatric department and the LDS Church followed with \$25,000 for remodeling and equipping the pharmacology department, thereby making it possible to recruit Dr. Louis Goodman. And then there was a fortunate turn of events.

World War II was ending and the US government was searching for a way to continue to support research. Under the Office of Scientific Research and Development (OSRD), research had been undertaken during the war that obviously would be important for civilians and the military. Luckily, Senator Elbert Thomas of Utah was the chairman of the committee assigned this task. Unaware of the government's interest, the new head of the Department of Medicine was looking for an area of research, indigenous to Utah, in which some of his staff might become interested, and he was seeking funds to support such studies. He had learned that observations on a hereditary form of muscular dystrophy were being conducted by a practicing orthopedist, Dr. Samuel H. Baldwin, and a geneticist at the university, Dr. Fayette Stephens. These men had limited training for an in-depth study of such a problem, and no financial support. But the conditions were ideal. Mormon

polygamy, intermarriage and inbreeding and the stability of the population made Utah unique for the study of an hereditary disorder. With the enthusiastic support of Drs. Stephens and Baldwin, plans were made to join with them and to expand the studies. Informed of this, Dr. Leo Marshall, a close friend of Senator Thomas and an enthusiastic supporter and promoter of the four-year school, communicated with the senator. The latter, along with Surgeon-General Parran of the US Public Health Service (USPHS), encouraged Dr. Wintrobe to draw up a comprehensive program of research and ultimately application was made for a research grant of \$100,000 per annum for the study of muscular dystrophy and other hereditary and metabolic disorders. The project was deliberately made very broad.

The grant request arrived in Washington at a crucial time. A specific request was needed to initiate the broad research grants program that Senator Thomas and Surgeon-General Parran were planning. The Utah request was incorporated into the bill that established the USPHS Research Grants Division and was numbered A-2.

To what the number A-1 applied has not been discovered, but probably it referred to the fact that of the \$100,000 approved by Congress, \$8,000 was withheld, with the full agreement of the applicant, to establish the office in Washington of the Research Grants Division of the USPHS. Utah thus received \$92,000, a sum that proved to be a particular boon for the Departments of Medicine, Biochemistry and Physiology, for they were able to recruit additional staff and to develop badly needed research facilities. The grant subsequently was renewed each year for 23 years and brought to Utah a total of \$4,043,689. Moreover, it served as the nucleus for many other studies that in time became the subjects of additional research grants. The outcome of the various investigations supported by the USPHS through its program of research support, with help from various foundations and private sources, has brought international recognition and renown to the university and its staff.

The early successes in developing facilities for research, even though the latter were limited, and the fortunate turn of events as regards government funding, served to breed optimism among the faculty and this, in turn, helped greatly in further recruitment. Dr. Thomas Dougherty came from Yale to head the Department of Anatomy,

as did Dr. Horace Davenport to head the Department of Physiology.

Veterans Administration Hospital

On the clinical side, Utah again showed itself to be a pioneer. The quality of medical care in the hospitals of the Veterans Administration (VA) had been gradually changing for the worse. Realizing this, Dr. Magnusson, the administrator of the system, decided to try to interest the medical schools of the country in assuming supervision of the hospitals in their vicinity. For many medical schools, this would represent a burden. For Utah, with only the Salt Lake County Hospital as its clinical base, the Salt Lake VA Hospital represented a welcome opportunity. The heads of the Departments of Medicine and Surgery stated that they would be happy to undertake the supervision of patient care at the VA Hospital, provided that they would be allowed not only to recruit and supervise the house staff for the hospital, but also to send third- and fourth-year students there.

The last request, however, was contrary to federal regulations. Veterans could not be exposed to students—only to inferior medical staffs. Fortunately Dr. Magnusson, who was aware of the advantages of strong teaching programs and the resulting superior patient care in university hospitals, indicated that he did not need to be familiarized with all the details. The result was that the University of Utah became the first school to use a VA hospital in its teaching program, a practice that, because of its success, ultimately was officially sanctioned.

In the meantime, the conditions at the County Hospital had become almost intolerable. The political control of its administration and operation had continued. The James A. Hamilton Associates, hospital consultants from Minneapolis, were invited to make a study and their report was devastating.⁶ Loss of accreditation by the American Medical Association became a serious possibility, one that would be harmful to the university, the medical school and the hospital. Charges and recriminations once again created a crisis atmosphere. Accreditation actually was withdrawn briefly and the county commissioners agreed to select a trained hospital administrator from a list agreed on by the university and the commissioners. Equally important was the appointment of a citizens' advisory board, as mentioned earlier.

The threatened loss of hospital accreditation was thereby averted.

Medical Center

The building of a medical center on the university campus, promised in 1943, was realized in 1965, albeit piecemeal. First, a cancer research wing was erected in 1951, mainly through federal funding. Then a radiobiology unit was added with Atomic Energy Commission funding. In the meantime, construction of a new VA hospital on adjoining US Army Fort Douglas property was begun. For a while, differences of opinion regarding the best site for a university hospital, adjoining the county hospital in the center of the city or in a more remote location in the eastern area of the university campus, threatened progress. Furthermore, the Utah state legislature continued to be an uncertain source of support. The possibility of federal matching funds served to stimulate their interest and that of the university, and in 1955 the Board of Regents finally approved plans for a medical center. A campaign to secure financial support from private sources was ap-

proved by them in 1958. The story of how support and funds were ultimately secured so that the medical center, opened in 1965, came to be constructed for the comparatively small sum of \$14,500,000 is one of patience, generosity and determination on the part of many persons, including medical school faculty and administrators, a few university administrators, a number of the members of the Utah medical profession, a few legislators and a significant number of forward-looking, public-spirited Utah citizens.

The subsequent history of medical education in Utah is a story of the development and the outstanding accomplishments of each of the many departments of the school and of the various members of the faculty—the development of additional units, the East Wing, the Eccles Library and, in 1981, a magnificent addition to the clinical center and the seven-story Medical Research and Education Building (see Figure 3). The latter two constructions were at a cost approximately four times that of the structure opened in 1965. Private gifts, including contributions by members of the community and the medical fac-



Figure 3.—The University of Utah Medical Center in 1981. In the foreground is the new clinical facility. Behind it, and attached to it, is the Medical Center built in 1965 which then provided clinical facilities, laboratories and offices. The tallest building to the left is the new Medical Research and Education Building and far beyond it, two buildings for student housing. Hidden by the Wintrobe Research Tower (Research and Education Building) is the Spencer Eccles Health Sciences Library and beyond these are the College of Nursing and the College of Pharmacy.

ulty, and funds provided by the State of Utah and the US government, made these developments possible. These facilities gradually replaced the various temporary structures that were put to use as necessity required: a latrine that formed part of the first metabolic laboratory where the earliest biochemical investigations on muscular dystrophy and other hereditary and metabolic disorders were carried out, the "blood shed" into which hematologic research expanded, a former military stable and a number of other ramshackle "make-dos" whose temporary status stretched to many years.

The growth of the medical school fortunately has not been parallel to that of the population of the state. Whereas the population of Utah did not quite triple between 1940 and 1980, the budget of the College of Medicine has grown from \$150,000 in 1943-1944 to approximately \$45 million for 1981-1982, a 300-fold increase. Classes have increased in size from 35 to 100 and the total enrollment of medical undergraduate students has risen from 160 in 1944 to 403 in 1981. The number of graduate students has grown from 8 or 10 to 480, if one includes residents and fellows as well as masters' degree and PhD candidates.

The makeup of the greatly expanded budget is worth reviewing. Of the \$45 million, \$8.4 million comes from the state, \$1.8 million from student fees, approximately \$19 million from the US government in the way of research grants, \$3.5 million from private sources (mostly foundations and corporations—almost all from outside of Utah), \$10.5 million from earnings by full-time staff physicians and turned back to the school and the remainder from miscellaneous sources. The impact of this infusion of funds, more than five times the amount provided by the state, on the economy of Utah is worthy of reflection. One more statistic of significance is that in 1944 the University of Utah received a total of \$9,800 in research funds. In 1981, \$60,170,857 were received for the support of research. Of this amount, 42.7 percent was awarded to the College of Medicine. Can Utah now repeat the old refrain, "We can't afford a medical school"?

Summary

Throughout, the guiding principles and goals of the medical school have been excellence in teaching, excellence in patient care and excellence in research. Every member of the faculty has con-

tributed to these goals, each in his own way. The establishment of US government financial support of medical research after World War II proved particularly important for Utah. Without such a start, it would have been extremely difficult to secure sufficient funds from private sources and none could have been expected from the State of Utah. As to private gifts, except for those provided by a few generous and farseeing citizens, it was necessary for the faculty to prove their worth before much local support could be stimulated. As it turned out, by enlisting as members of the faculty of the four-year medical school a number of able, hard-driving, imaginative and ambitious young medical scientists, many applications for research grants were approved by the USPHS and by various foundations, pharmaceutical houses and other organizations. The success of these studies led to recognition of the University of Utah as an important medical research center. With successful research and a growing reputation as an educational center, private contributions became less and less difficult to obtain and the state legislature became more generous. Furthermore, the principle was established that every member of the faculty was expected to teach and to carry out research and, in the case of the clinical faculty, to participate in clinical care. As a consequence, the acquiring of research funds made it possible to secure a well-rounded faculty that contributed to all the various aspects of a modern medical center and teaching and research institution. The result has been that the standards of teaching and patient care, in addition to research, have attained a very high level. In time, the University of Utah College of Medicine has come to be known as one of the important medical centers of the United States and is internationally recognized for its research contributions, as a postgraduate training center and as the source of several important medical textbooks that are used throughout the world.

REFERENCES

1. Flexner A: Medical Education in the United States and Canada. New York, Heritage Press, 1973 (reissue of the 1910 report)
2. Fitzpatrick WK: Medical memorabilia—Utah's first medical school. *Rocky Mt Med J* 1971 Jan; 68:21
3. Young WB, quoted in A History of the University of Utah College of Medicine, thesis for medical doctorate, Leslie R. C. Agnew, MD, Mar 29, 1963 (unpublished)
4. Chamberlin RV: The University of Utah, a History of the First Hundred Years, 1850 to 1950. Salt Lake City, University of Utah Press, 1960
5. Chamberlin RV: Life Sciences at the University of Utah. Background and History. Salt Lake City, University of Utah Press, 1950
6. Hamilton JA and Associates: The Hamilton Report, Confidential report, 2 Vol. Minneapolis, James A. Hamilton and Associates, Oct. 29, 1954